

SEQUENCE LISTING

<110> Københavns Universitet
 Louise Jørgensen
 5 Pamela Magistrado
 Thomas Lavstsen
 Ali Salanti
 Morten A. Nielsen
 Trine Staalsø
 10 Lars Hviid
 Thor Theander
 Anja Jensen

<120> COMPOUNDS USEFUL IN THE DIAGNOSIS AND TREATMENT OF MALARIA
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	Cys	Arg	Asp	Asp	Ser	Lys	Lys	Leu	Tyr	Cys	Ser	His	Asn	Gly	Tyr	Asp
				340					345					350		
30	Cys	Thr	Lys	Thr	Ile	Arg	Asn	Lys	Asp	Ile	Leu	Ser	Asp	Asn	Pro	Lys
			355					360					365			
	Cys	Thr	Gly	Cys	Ser	Val	Lys	Cys	Lys	Val	Tyr	Glu	Leu	Trp	Leu	Arg
		370					375					380				
35	Asn	Gln	Arg	Asn	Glu	Phe	Glu	Lys	Gln	Lys	Lys	Lys	Tyr	Tyr	Lys	Glu
	385					390					395					400
	Ile	Gln	Thr	Tyr	Thr	Ser	Lys	Asp	Ala	Lys	Thr	Asp	Ser	Asn	Ile	Asn
				405						410					415	
	Asn	Glu	Tyr	Tyr	Lys	Glu	Phe	Tyr	Asp	Lys	Leu	Lys	Asn	Glu	Gly	Tyr
				420				425						430		
40	Glu	Thr	Leu	Asn	Lys	Phe	Ile	Lys	Leu	Leu	Asn	Glu	Gly	Arg	Tyr	Cys
			435					440					445			
	Lys	Glu	Lys	Ile	Ser	Gly	Glu	Arg	Asn	Ile	Asp	Phe	Thr	Met	Thr	Gly
		450					455					460				
45	Asp	Lys	Asp	Ala	Phe	Tyr	Arg	Ser	Asp	Tyr	Cys	Gln	Ile	Cys	Pro	Glu
	465					470					475					480
	Cys	Gly	Val	Gln	Cys	Ser	Gly	Thr	Thr	Cys	Thr	Pro	Lys	Lys	Val	Ile
				485						490					495	
	His	Pro	Asn	Cys	Lys	Asp	Lys	Glu	Thr	Tyr	Glu	Pro	Gly	Asp	Ala	Lys
				500				505						510		
50	Thr	Thr	Asp	Ile	Thr	Val	Leu	Tyr	Ser	Gly	Asp	Glu	Glu	Gly	Asp	Ile
			515					520					525			
	Ala	Gln	Lys	Leu	Gln	Asp	Phe	Cys	Asn	Asp	Lys	Asn	Lys	Glu	Asn	Asp
		530					535					540				
55	Glu	Asn	Tyr	Glu	Lys	Trp	Gln	Cys	Tyr	Tyr	Lys	Ser	Ser	Glu	Ile	Asn
	545					550					555					560
	Lys	Cys	Gln	Met	Thr	Pro	Ser	Ser	His	Lys	Val	Pro	Lys	His	Gly	Tyr
				565						570					575	
	Ile	Met	Ser	Phe	Tyr	Ala	Phe	Phe	Asp	Leu	Trp	Val	Lys	Asn	Leu	Leu
				580					585					590		

	Ile	Asp	Ser	Ile	Asn	Trp	Lys	Asn	Asp	Leu	Thr	Asn	Cys	Ile	Asn	Asn
			595					600					605			
	Thr	Asn	Val	Thr	Asp	Cys	Lys	Asn	Asp	Cys	Asn	Thr	Asn	Cys	Lys	Cys
		610					615					620				
5	Phe	Glu	Asn	Trp	Ala	Lys	Thr	Lys	Glu	Asn	Glu	Trp	Lys	Lys	Val	Lys
		625				630					635					640
	Thr	Ile	Tyr	Lys	Asn	Glu	Asn	Gly	Asn	Thr	Asn	Asn	Tyr	Tyr	Lys	Lys
					645					650						655
	Leu	Asn	Asn	His	Phe	Gln	Gly	Tyr	Phe	Phe	His	Val	Met	Lys	Glu	Leu
10					660					665					670	
	Asn	Lys	Glu	Glu	Lys	Trp	Tyr	Lys	Leu	Met	Glu	Asp	Leu	Lys	Glu	Lys
			675					680					685			
	Ile	Asp	Ser	Ser	Asn	Leu	Lys	Asn	Gly	Thr	Lys	Asp	Ser	Glu	Gly	Ala
		690					695					700				
15	Ile	Lys	Val	Leu	Phe	Asp	His	Leu	Lys	Asp	Ile	Ala	Glu	Arg	Cys	Ile
		705				710					715					720
	Asp	Asn	Asn	Ser	Lys	Asp	Ser	Cys	Pro	Pro	Ser	Val	Asp	Thr	Lys	Thr
					725					730					735	
	Asn	Pro	Cys	Ala	Lys	Pro	Pro	Gly	Ser	Lys	Pro	Thr	Lys	Ser	Val	Lys
20					740					745					750	
	Gln	Leu	Ala	Glu	His	Met	Gln	Gln	Lys	Ala	Gln	Lys	Leu	Leu	Gly	Thr
			755					760							765	
	Arg	Gly	Gly	Glu	Ser	Lys	Leu	Lys	Gly	Asp	Ala	Thr	Arg	Gly	Thr	Tyr
		770					775					780				
25	Asn	Leu	Gly	Gly	Gln	Gly	Asn	Thr	Leu	Asn	Gly	Asp	Ile	Cys	Lys	Ile
		785				790					795					800
	Thr	Lys	Asn	His	Thr	Asn	Asp	Ser	Arg	Pro	Asn	Gly	Glu	Pro	Cys	Thr
					805					810					815	
	Gly	Lys	Asp	Lys	Val	Lys	Asn	Gly	Phe	Arg	Leu	Lys	Ile	Gly	Thr	Pro
30					820				825						830	
	Trp	Thr	Asn	Ile	Val	Gln	Lys	Lys	Lys	Lys	Ser	Tyr	Lys	Asp	Phe	
			835					840					845			
	Tyr	Leu	Pro	Pro	Arg	Arg	Gln	His	Met	Cys	Thr	Ser	Asn	Leu	Glu	Asn
		850					855					860				
35	Leu	Ser	Thr	Ser	Ser	Lys	Gly	Leu	Ser	Asn	Gly	Ser	Phe	Ala	Ser	His
		865				870					875					880
	Ser	Leu	Leu	Gly	Asp	Val	Leu	Leu	Ala	Ala	Lys	Phe	Glu	Ala	Gln	Lys
					885					890					895	
	Ile	Ile	Leu	Val	Tyr	Lys	Asn	Lys	Asn	Asn	Ile	Asn	Ile	Arg	Lys	Arg
40					900					905					910	
	Ile	Thr	Asp	Pro	Asn	Asp	Gln	Ala	Thr	Val	Cys	Arg	Ala	Ile	Arg	Tyr
			915					920					925			
	Ser	Phe	Ala	Asp	Leu	Gly	Asp	Ile	Ile	Arg	Gly	Lys	Asp	Met	Trp	Asn
		930					935					940				
45	Ile	Asn	Ser	Asp	Ala	Lys	Asp	Leu	Gln	Asp	Arg	Leu	Glu	Lys	Ile	Phe
		945				950					955					960
	Lys	Thr	Ile	Asn	Glu	Lys	Leu	Pro	Asn	Glu	Ile	Gln	Lys	Arg	Tyr	Thr
					965					970					975	
	Asn	Arg	Glu	Asn	Lys	His	Leu	Asp	Leu	Arg	Ser	Asp	Trp	Trp	Glu	Ala
50					980				985						990	
	Asn	Arg	His	Gln	Val	Trp	Arg	Ala	Met	Lys	Cys	Ala	Thr	Lys	Gly	Ile
					995				1000				1005			
	Ser	Asn	Asn	Asn	Cys	Asn	Gly	Ile	Pro	Ile	Glu	Asp	Tyr	Ile	Pro	Gln
		1010					1015					1020				
55	Arg	Leu	Arg	Trp	Met	Thr	Glu	Trp	Ala	Glu	Trp	Tyr	Cys	Lys	Lys	Gln
		1025				1030					1035					1040
	Ser	Gln	Glu	Tyr	Glu	Lys	Leu	Glu	Glu	Lys	Cys	Gly	Met	Cys	Thr	Gly
					1045					1050					1055	
	Lys	Gly	Gln	Gly	Asp	Gly	Lys	Asp	Cys	Thr	Gln	Lys	Asp	Lys	Glu	Cys

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				1060					1065				1070				
	Ser	Pro	Cys	Lys	Lys	Ala	Cys	Asp	Ala	Tyr	Lys	Lys	Glu	Ile	Glu	Lys	
				1075					1080				1085				
5	Trp	Glu	Lys	Gln	Trp	Lys	Thr	Val	Ser	Ala	Ile	Tyr	Gln	Ile	Leu	Tyr	
				1090					1095				1100				
	Ala	Lys	Ala	Arg	Ile	Val	Ala	Ser	Asn	Gly	Gly	Pro	Gly	Tyr	Tyr	Asn	
						1110						1115				1120	
	Thr	Glu	Val	Gln	Lys	Lys	Asp	Arg	Ser	Val	Tyr	Asp	Phe	Leu	Tyr	Glu	
						1125					1130					1135	
10	Leu	His	Leu	Gln	Asn	Gly	Gly	Lys	Lys	Gly	Pro	Pro	Pro	Ala	Thr	His	
						1140					1145					1150	
	Pro	Tyr	Lys	Ser	Val	Asn	Thr	Arg	Asp	Lys	Arg	Asp	Ala	Thr	Asp	Asp	
						1155				1160			1165				
	Thr	Thr	Pro	Thr	Val	Tyr	Ser	Thr	Ala	Ala	Gly	Tyr	Val	His	Gln	Glu	
15						1170					1175		1180				
	Ala	His	Ile	Gly	Asp	Cys	Lys	Glu	Gln	His	Val	Phe	Cys	Asp	Asn	Asn	
						1185					1190		1195			1200	
	Gly	Asn	Lys	Glu	Lys	Tyr	Ala	Phe	Lys	Asn	Pro	Pro	Asn	Val	Tyr	Val	
						1205					1210					1215	
20	Glu	Ala	Cys	Lys	Cys	Met	Thr	Arg	Glu	Ala	Pro	Pro	Pro	Pro	Thr	Thr	
						1220					1225					1230	
	Pro	Ser	Thr	Pro	Asn	Pro	Cys	Ala	Glu	Thr	Gly	Gly	Val	His	Thr	Ile	
						1235					1240			1245			
	Lys	Thr	Val	Thr	Asp	Val	Ala	Lys	Ile	Leu	Gln	Gly	Glu	Ala	Asn	Glu	
25						1250					1255		1260				
	Thr	Met	Leu	Lys	Asn	Ser	Ser	Asn	Gly	Asn	Asp	Lys	Asp	Glu	Ser	Lys	
						1265					1270		1275			1280	
	Leu	Lys	Gly	Lys	Ala	Glu	Glu	Gly	Asp	Tyr	Ser	Arg	Gly	Gly	Thr	Pro	
						1285					1290					1295	
30	Ser	Asp	Phe	Asn	Asn	Asn	Leu	Cys	Gly	Ile	Thr	Gln	Lys	His	Ser	Asn	
						1300					1305					1310	
	Ala	His	Asn	Asp	Ser	Gln	Gln	Pro	Cys	Tyr	Gly	Lys	Asp	Gln	Lys	Arg	
						1315					1320			1325			
	Phe	Asn	Val	Gly	Thr	Glu	Trp	Ser	Phe	Lys	Asp	Asn	His	Arg	Lys	Arg	
35						1330					1335		1340				
	Thr	His	Pro	Glu	Ala	Tyr	Met	Pro	Pro	Arg	Arg	Glu	His	Ile	Cys	Thr	
						1345					1350		1355			1360	
	Ser	Asn	Leu	Glu	Tyr	Leu	Ile	His	Lys	Arg	Lys	Lys	Pro	Ile	Ile	Glu	
						1365					1370					1375	
40	Gly	Asp	Pro	Asn	Lys	Ile	Ile	His	Ser	Leu	Leu	Gly	Asp	Val	Leu	Leu	
						1380					1385					1390	
	Ala	Ala	Lys	Tyr	Glu	Ala	Glu	Asn	Ile	Lys	Lys	Leu	Tyr	Glu	Glu	Asn	
						1395					1400		1405				
	Asn	Asn	Arg	Lys	Asp	Gln	Glu	Gly	Ile	Cys	Arg	Ala	Met	Lys	Tyr	Ser	
45						1410					1415		1420				
	Phe	Ala	Asp	Ile	Gly	Asp	Ile	Ile	Arg	Gly	Lys	Asp	Met	Trp	Ile	Glu	
						1425					1430		1435			1440	
	Asn	Asn	Asp	Ala	Lys	Arg	Leu	Gln	Thr	Asn	Leu	Lys	Glu	Ile	Phe	Thr	
						1445					1450					1455	
50	Lys	Ile	Lys	Glu	Lys	Thr	Gly	Gly	Thr	Thr	Tyr	Asn	Glu	Asp	Asn	Asp	
						1460					1465					1470	
	Pro	Tyr	Leu	Lys	Leu	Arg	Ala	Asp	Trp	Trp	Glu	Ala	Asn	Arg	Ala	Lys	
						1475					1480		1485				
	Val	Trp	Lys	Ala	Met	Lys	Cys	Lys	Thr	Asn	Gly	Val	Asp	Ile	Thr	Cys	
55						1490					1495		1500				
	Asp	Ser	Asp	His	Thr	Pro	Leu	Asp	Asp	Tyr	Ile	Pro	Gln	Arg	Leu	Arg	
						1505					1510		1515			1520	
	Trp	Met	Thr	Glu	Trp	Ala	Glu	Trp	Tyr	Cys	Lys	Ala	Gln	Ser	Gln	Glu	
						1525					1530					1535	

Tyr Lys Lys Leu Glu Glu Lys Cys Ser Gln Cys Lys Ser Lys Gly Lys
 1540 1545 1550
 Gly Gly Asn Glu Cys Tyr Arg Glu Thr Lys Glu Cys Asn Asp Cys Lys
 1555 1560 1565
 5 Gln Ala Cys Glu Glu Tyr Lys Arg Lys Ile Lys Thr Trp Ala Asp Gln
 1570 1575 1580
 Trp Lys Val Ile Ser Asn Lys Tyr Glu Asp Leu Tyr Lys Lys Ala Gln
 1585 1590 1595 1600
 Asn Pro Thr Asn Ala Val Leu Lys Asp Asn Lys Asp Glu Lys Asp Lys
 1605 1610 1615
 10 Asn Val Ile Asp Phe Leu Thr Gln Leu Gln Lys Ala Asn Asn Gly Glu
 1620 1625 1630
 Lys Thr Gly Val His Thr Val Tyr Ser Thr Ala Ala Gly Tyr Ile His
 1635 1640 1645
 15 Gln Glu Ala Arg Thr Arg Glu Cys Gln Glu Gln Arg Glu Phe Cys Asp
 1650 1655 1660
 Lys Lys Asn Gly Ile Asp Asn Thr Ser Tyr Ala Phe Lys Asp Pro Pro
 1665 1670 1675 1680
 His Gly Tyr Ala Thr Ala Cys Asp Cys Ile Asn Arg Ser Gln Thr Glu
 1685 1690 1695
 20 Glu Pro Lys Lys Lys Glu Glu Asn Val Glu Ser Ala Cys Lys Ile Val
 1700 1705 1710
 Glu Glu Val Leu Ser Lys Pro Arg Asp Lys Thr Thr Gly Gly Ile Asp
 1715 1720 1725
 25 His Cys Asn Pro Lys Tyr Tyr Pro Arg Lys Glu Asn Tyr Pro Gly Trp
 1730 1735 1740
 Asn Cys Thr Pro Gly Gln Phe Lys Ser Gly His Ala Gly Ala Cys Met
 1745 1750 1755 1760
 Pro Pro Arg Arg Ile Lys Leu Cys Val Ile Asn Leu Gln Tyr Leu Asn
 1765 1770 1775
 30 Glu Lys Lys Ser Pro Glu Glu Leu Arg Lys Ala Phe Ile Gln Cys Ala
 1780 1785 1790
 Ala Ile Glu Thr Tyr Trp Leu Trp Gln Lys Tyr Lys Lys Asp Lys Asn
 1795 1800 1805
 35 Gly Gly Val Ala Gln Ala Lys Leu Asn Ser Gly Thr Ile Pro Asp Asp
 1810 1815 1820
 Phe Lys Arg Gln Met Phe Tyr Thr Phe Gly Asp Tyr Arg Asp Leu Cys
 1825 1830 1835 1840
 Leu Asp Thr Asp Ile Ser Ser Lys Ala Asp Thr Ser Thr Gly Val Gly
 1845 1850 1855
 40 Lys Val Lys Ile Asn Ile Asp Ser Val Phe Gln Lys Ile Asp Ile Thr
 1860 1865 1870
 Asn Val Glu Gln Arg Lys Pro Trp Trp Gly Lys Asn Ala Glu Ala Ile
 1875 1880 1885
 45 Trp Asp Gly Met Leu Cys Ala Leu Ser Tyr Asn Thr Thr Asn Lys Asn
 1890 1895 1900
 Met Asp Tyr Asn Ala His Thr Lys Leu Asn Pro Thr Tyr Gly Tyr Asn
 1905 1910 1915 1920
 Ala Ile Lys Ser Glu Leu Glu Asp Phe Val Asn Arg Pro Gln Phe Leu
 1925 1930 1935
 50 Arg Trp Phe Thr Glu Trp Ser Asp Glu Phe Cys Thr Glu Arg Ser Ile
 1940 1945 1950
 Lys Ile Lys Glu Leu Glu Thr Lys Cys Asn Asp Cys Thr Val Ser Glu
 1955 1960 1965
 55 Ser Gly Thr Ser Asp Ala Thr Gly Asn Lys Thr Cys Asp Asp Lys Asp
 1970 1975 1980
 Lys Cys Asp Glu Cys Lys Arg Ala Cys Thr Thr Tyr Lys Thr Trp Leu
 1985 1990 1995 2000
 Lys Asn Trp Lys Thr Gln Tyr Lys Thr Gln Ser Lys Lys Tyr Phe Asp

	2005							2010							2015						
	Asp	Lys	Arg	Lys	Glu	Leu	Tyr	Lys	Ser	Ile	Asp	Asp	Val	Ala	Ser	Ser					
				2020					2025					2030							
5	Thr	Gln	Ala	Tyr	Gln	Tyr	Leu	His	Ala	Gln	Leu	Lys	Lys	Leu	Cys	Gly					
			2035					2040					2045								
	Asn	Ala	Asp	Cys	Lys	Cys	Met	Asp	Gly	Glu	Ser	Lys	Glu	Thr	Thr	Gly					
		2050					2055					2060									
	Gln	Pro	Asp	Asn	Ser	His	Asp	Ser	His	Met	Pro	Ala	Ser	Leu	Asp	Asp					
	2065					2070					2075				2080						
10	Glu	Pro	Glu	Glu	Val	Asn	Gly	Lys	Cys	Asn	Cys	Lys	Val	Lys	His	Arg					
					2085					2090					2095						
	Pro	Gln	Pro	Pro	Leu	Ala	Leu	Pro	Pro	Pro	Ala	Pro	Ser	Gly	Pro	Pro					
				2100					2105					2110							
	Ala	Glu	Asp	Gln	Ile	Glu	His	Asp	Asn	Arg	Gly	Arg	Ser	Glu	Arg	Gly					
15			2115					2120					2125								
	Asp	Gln	Gly	Pro	Leu	Pro	Ala	Arg	Pro	Pro	Pro	Pro	Pro	Gln	Ala	Ala					
		2130					2135					2140									
	Gln	Pro	Pro	Gln	Pro	Lys	Pro	Lys	Arg	Thr	Gly	Glu	Gly	Leu	Gly	Arg					
	2145					2150					2155				2160						
20	Asn	Leu	Pro	Pro	Ala	Asp	Arg	Asn	Thr	Asn	Leu	Ser	Asp	Ser	Glu	Glu					
					2165					2170					2175						
	Glu	Asp	Asp	Glu	Asp	Asp	Asp	Glu	Val	Gln	Glu	Glu	Glu	Glu	Thr	Pro					
				2180					2185					2190							
	Pro	Ser	Glu	Ala	Glu	Glu	Gly	Glu	Gly	His	Val	Glu	Thr	Glu	Glu	Glu					
25			2195					2200					2205								
	Thr	Lys	Pro	Val	Lys	Glu	Lys	Thr	Glu	Gly	Ala	Gly	Ala	Thr	Glu	Val					
			2210				2215					2220									
	Thr	Lys	Gln	Gly	Ser	Ala	Pro	Thr	Ala	Thr	Thr	Pro	Thr	Val	Glu	Asp					
	2225					2230					2235				2240						
30	Ile	Cys	Ala	Thr	Val	Ala	Lys	Ala	Leu	Lys	Gly	Asp	Lys	Ser	Leu	Asn					
					2245					2250					2255						
	Ala	Ala	Cys	Ala	Leu	Lys	Tyr	Gly	Lys	Asn	Asn	Ser	Arg	Leu	Gly	Trp					
				2260					2265					2270							
	Lys	Cys	Ile	Pro	Thr	Ser	Gly	Asp	Lys	Thr	Asp	Thr	Ser	Glu	Asn	Gly					
35			2275					2280					2285								
	Ala	Pro	Arg	Arg	Ala	Arg	Ser	Ala	His	Gly	Gly	Lys	Ser	Asp	Ser	Glu					
			2290				2295					2300									
	Lys	Gly	Ser	Ile	Cys	Val	Pro	Pro	Arg	Arg	Arg	Arg	Leu	Tyr	Ile	Lys					
	2305				2310						2315				2320						
40	Lys	Ile	Val	Asp	Trp	Ala	Glu	Ser	Gln	Ser	Lys	Thr	Val	Thr	Ser	Val					
				2325						2330					2335						
	Asn	Gly	Asp	Gly	Asn	Gly	Ser	Gln	Glu	Val	Val	Ser	Val	Asn	Gly	Ala					
				2340					2345					2350							
	Ser	Glu	Ser	Gly	Gly	Ser	Gly	Ser	Gly	Thr	Glu	Ser	Gln	Ala	Ser	Asp					
45			2355				2360						2365								
	Val	Ser	Gln	Gly	Asn	Gly	Ala	Ser	Thr	Ser	Pro	Gln	Val	Ala	Leu	Leu					
			2370				2375					2380									
	His	Ala	Phe	Val	Lys	Ser	Ala	Ala	Ile	Glu	Thr	Phe	Phe	Ala	Trp	His					
	2385				2390					2395					2400						
50	Lys	Tyr	Lys	Val	Asp	Lys	Glu	Ile	Glu	Glu	Lys	Glu	Lys	Gln	Ala	Ala					
				2405						2410					2415						
	Gln	Asn	His	Leu	Val	Gln	Arg	Lys	Thr	Ser	Glu	Asn	Pro	Gln	Lys	Lys					
				2420					2425					2430							
	Leu	Glu	Gly	Gly	Glu	Ile	Pro	Glu	Asp	Phe	Lys	Arg	Gln	Met	Phe	Tyr					
55			2435				2440						2445								
	Thr	Leu	Gly	Asp	Tyr	Arg	Asp	Ile	Leu	Val	Gly	Asp	Lys	Thr	Met	Ile					
			2450				2455					2460									
	Glu	Ala	Leu	Glu	Lys	Ser	Gly	Asp	Thr	Lys	Ile	Glu	Asp	Ile	Ser	Glu					
	2465				2470						2475				2480						

5	Lys	Ile	Pro	Lys	Ile	Leu	Asp	Gly	Glu	Asn	Asn	Lys	Ala	Ala	Gly	Gly
					2485					2490					2495	
	Gly	Pro	Lys	Gln	Pro	Asn	Ser	Gly	Lys	Thr	Pro	Gln	Glu	Trp	Trp	Lys
				2500					2505					2510		
10	Glu	Asn	Ala	Lys	His	Ile	Trp	His	Gly	Met	Ile	Cys	Ala	Leu	Thr	Tyr
			2515					2520					2525			
	Asn	Thr	Asp	Ser	Asn	Gly	Lys	Asp	Lys	Lys	Ile	Gln	Gln	Val	Lys	Ala
			2530				2535					2540				
15	Thr	Asp	Asn	Thr	Asp	Leu	Phe	Gln	Lys	Leu	Lys	Lys	Asp	Asn	Asp	Tyr
						2550						2555				2560
	Glu	Thr	Val	Ser	Phe	Gly	Ala	Ser	Gly	Thr	Gly	Ala	Lys	Ser	Asn	Asp
					2565					2570					2575	
20	Asp	Thr	Lys	Leu	Lys	Asn	Phe	Val	Val	Arg	Pro	Thr	Tyr	Phe	Arg	Trp
				2580					2585					2590		
	Leu	Glu	Glu	Trp	Gly	Glu	Glu	Phe	Cys	Arg	Lys	Gln	Lys	His	Lys	Leu
				2595				2600					2605			
25	Tyr	Ile	Ile	Lys	Lys	Asp	Cys	Arg	Asp	Asn	Lys	Phe	Cys	Ser	Gly	Asp
			2610				2615					2620				
	Gly	Leu	Arg	Cys	Asp	Glu	Lys	Val	Pro	Asp	Lys	Lys	Asp	Ile	Phe	Lys
					2625		2630				2635				2640	
30	His	Phe	Asp	Cys	Pro	Ser	Cys	Ala	Arg	His	Cys	Arg	Ser	Tyr	Arg	Lys
					2645					2650					2655	
	Trp	Ile	Glu	Arg	Lys	Lys	Thr	Glu	Tyr	Glu	Lys	Gln	Glu	Ser	Ala	Tyr
				2660					2665					2670		
35	Ser	Lys	Gln	Lys	Ser	Asn	Tyr	Val	Asn	Gly	Ser	Asn	Gly	Asp	Gly	Gly
				2675				2680					2685			
	Asn	Asn	Asn	Asp	Lys	Glu	Phe	Tyr	Thr	Lys	Leu	Glu	Thr	Cys	Thr	Lys
				2690			2695					2700				
40	Ala	Thr	Asn	Phe	Leu	Glu	Ser	Leu	Lys	Gly	Gln	Cys	Ile	Gly	Asn	Asn
					2710						2715				2720	
	Asn	Gly	Gly	Thr	Asp	Ile	Lys	Phe	Ser	Asn	Thr	Asn	Ile	Thr	Phe	Gly
					2725					2730					2735	
45	Ser	Ala	Glu	Asp	Cys	Lys	Pro	Cys	Ser	Glu	Phe	Lys	Val	Asn	Cys	Glu
				2740					2745					2750		
	Asn	Gly	Ser	Cys	Gly	Ser	Ala	Lys	Gln	Lys	Asp	Cys	Pro	Asn	Asn	Thr
				2755				2760					2765			
50	Ile	Thr	Ser	Gln	Asn	Ile	Lys	Gly	Leu	Thr	Asp	Gln	Val	Asp	Met	Arg
					2770		2775					2780				
	Val	Ser	Asp	Asn	Thr	Glu	Ser	Gly	Phe	Glu	Gly	Asp	Leu	Gly	Ile	Cys
					2785		2790				2795				2800	
55	Gln	Gly	Ala	Gly	Ile	Phe	Lys	Gly	Ile	Arg	Lys	Asp	Glu	Trp	Lys	Cys
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	Gly	Asp	Phe	Cys	Gly	Ile	Asp</									

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 355 360 365

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	Phe	Tyr	Met	Asp	Leu	Asp	Cys	Pro	Arg	Cys	Glu	Glu	Glu	Cys	Arg	Lys
	370						375					380				
	Tyr	Asp	Glu	Trp	Ile	Glu	Asn	Lys	Glu	Asn	Glu	Leu	Asp	Lys	Gln	Lys
	385					390					395					400
5	Asn	Lys	Tyr	Thr	Lys	Glu	Ile	Glu	Lys	Leu	Lys	Asp	Asn	Ser	Lys	Ser
					405					410					415	
	Asn	Tyr	Asp	Lys	Asn	Phe	Tyr	Leu	Thr	Leu	Thr	Lys	Lys	Tyr	Gly	Ser
				420					425					430		
10	Ile	Asn	Leu	Phe	Leu	Asp	Thr	Leu	Lys	Glu	Gly	Ser	His	Cys	Ser	Tyr
			435					440					445			
	Asn	Thr	Ile	Glu	Asp	Lys	Ile	Asp	Phe	Asn	Lys	Ala	Asn	Gln	Thr	Phe
	450						455					460				
	Thr	Ser	Ser	Lys	Phe	Cys	Gly	Ala	Cys	Pro	Phe	Tyr	Gly	Val	Lys	Cys
	465					470					475					480
15	Asn	Trp	Lys	Thr	Cys	Thr	Glu	Val	Lys	Glu	Asn	Glu	Tyr	Lys	Lys	Lys
					485					490					495	
	Asn	Lys	Val	Asp	Ser	Thr	His	Thr	Thr	Glu	Gln	Pro	Thr	Ala	Ile	Asp
				500					505					510		
20	Val	Leu	Val	Thr	His	Ile	Arg	Gly	Thr	Asn	Ile	Pro	Glu	Asp	Leu	Lys
			515					520					525			
	Asp	Cys	Lys	Lys	Tyr	Gly	Leu	Phe	Lys	Gly	Met	Arg	Lys	Gln	Ala	Trp
	530					535						540				
	Lys	Cys	Gln	Tyr	Ile	Asn	Pro	Tyr	Asp	Glu	Cys	Lys	Leu	Ser	Pro	Phe
	545					550					555					560
25	Val	Lys	Asp	Ile	Asp	Val	Asp	Asp	Arg	Ile	Leu	Phe	Lys	Val	Leu	Phe
					565					570					575	
	Glu	Arg	Trp	Leu	Lys	Tyr	Phe	Ile	Gln	Asp	Phe	Asn	Asn	Val	Lys	Asp
				580					585					590		
30	Lys	Ile	Asn	Arg	Cys	Thr	Lys	Phe	Glu	Lys	Gly	Lys	Asp	Asn	Thr	Cys
			595					600					605			
	Ile	Lys	Gly	Cys	Lys	His	Lys	Cys	Glu	Cys	Val	Glu	Lys	Trp	Ile	Lys
	610						615					620				
	Ile	Lys	Glu	Ala	Glu	Trp	Lys	Lys	Ile	Asn	Gln	His	Tyr	Asn	Gln	Gln
	625					630					635					640
35	Lys	Lys	His	Tyr	Thr	Tyr	Ser	Val	Pro	Arg	Trp	Val	Asn	Ser	Tyr	Leu
					645					650					655	
	Thr	His	Gln	His	Phe	Ser	Ser	Asp	Phe	Ile	Asn	Ala	Leu	Glu	Ala	Phe
				660					665					670		
40	Lys	Asn	Ile	Arg	Gly	Leu	Glu	Asn	Leu	Lys	Glu	Cys	Ser	Ser	Asp	Thr
			675					680					685			
	Cys	Lys	Ile	Glu	Lys	Ile	Arg	Thr	Ile	Asp	Asp	Asp	Leu	Ile	Lys	Glu
	690						695					700				
	Leu	Ile	Ser	Lys	Leu	Lys	Asp	Lys	Cys	Ala	Met	Cys	Lys	Asn	Gln	His
	705					710					715					720
45	Lys	Ala	Thr	Lys	Gly	Lys	Glu	Cys	Cys	Gly	Lys	Leu	Pro	Lys	Thr	Leu
					725					730					735	
	Asn	Asp	Gln	Asp	Asp	Glu	Glu	Asp	Glu	Glu	Tyr	Glu	Ala	Pro	Pro	Pro
				740					745					750		
50	Pro	Thr	Pro	Pro	Arg	Thr	Gln	Lys	Asn	Pro	Cys	Val	Asn	Gly	Gln	Asn
			755					760					765			
	Gln	Lys	Val	Arg	Lys	Ile	Arg	Ser	Val	Arg	Arg	Val	Pro	Lys	Arg	Met
	770						775					780				
	Gln	Lys	Gln	Ala	Ser	Val	Arg	Val	Pro	Arg	Ala	Arg	Gln	Gly	Gly	Glu
	785					790					795					800
55	Arg	Glu	Gln	Val	Val	Lys	Asn	Gly	Arg	Gln	Asp	His	His	Leu	Gln	Arg
					805					810					815	
	Val	Leu	Leu	Val	Gly	Glu	Ala	Glu	Ala	Glu	Glu	Pro	Glu	Thr	Ala	Glu
				820					825					830		
	Glu	Lys	Lys	Glu	Glu	Glu	Lys	Glu	Glu	Asp	Thr	Asp	Gly	Lys	Val	Gln

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		835		840		845													
	Pro	Pro	Pro	Ala	Ala	Thr	Thr	Pro	Gly	Val	Lys	Pro	Pro	Cys	Asp	Ile			
		850					855					860							
5	Val	Glu	Lys	His	Phe	Lys	Asp	Lys	His	Asp	Asn	Thr	Gly	Ala	Ile	Asp			
	865					870					875					880			
	His	Cys	Asn	Pro	Lys	Lys	Asp	Tyr	Pro	Pro	Trp	Lys	Asn	Asp	Lys	Ser			
					885					890					895				
	Leu	Val	Asp	Glu	Asp	Gly	Val	Tyr	Met	Pro	Pro	Arg	Arg	Gln	Lys	Leu			
			900						905					910					
10	Cys	Val	Ile	Asn	Leu	Glu	His	Phe	Lys	Glu	Asn	Thr	Ser	Asp	Asp	Leu			
			915					920					925						
	Arg	Glu	Ala	Phe	Ile	Lys	Cys	Ala	Ala	Ala	Glu	Thr	Tyr	Leu	Leu	Trp			
		930					935					940							
	Gln	Lys	Tyr	Lys	Glu	Asp	Asn	Asn	Gly	Gly	Glu	Asp	Leu	Gln	Asn	Gln			
15	945					950					955					960			
	Leu	Lys	Ser	Gly	Lys	Ile	Pro	Glu	Asp	Phe	Lys	Arg	Gln	Met	Phe	Tyr			
					965					970					975				
	Thr	Phe	Gly	Asp	Tyr	Arg	Asp	Phe	Leu	Phe	Gly	Thr	Asp	Ile	Ser	Lys			
				980					985					990					
20	Leu	Asn	Lys	His	Thr	Glu	Ala	Val	Lys	Thr	Asn	Ile	Asp	Arg	Ile	Phe			
			995					1000					1005						
	Pro	Pro	Thr	Glu	Arg	Thr	Asn	Asp	Thr	Ile	Arg	Lys	Glu	Phe	Trp	Glu			
		1010					1015					1020							
	Lys	Asn	Ala	Glu	Ser	Ile	Trp	Gln	Gly	Met	Leu	Cys	Ala	Leu	Ser	Tyr			
25	1025					1030					1035					1040			
	Asn	Ser	Asn	Asp	Lys	Lys	Met	Asp	Pro	Asp	Val	Gln	Lys	Glu	Leu	Asn			
					1045					1050					1055				
	Ser	Thr	Tyr	Asn	Tyr	Asp	Thr	Ile	Lys	Asn	Asn	Leu	Glu	Asp	Phe	Ala			
				1060					1065					1070					
30	Asn	Arg	Pro	Gln	Phe	Leu	Arg	Trp	Phe	Ile	Glu	Trp	Ser	Asp	Glu	Phe			
			1075					1080					1085						
	Cys	Arg	Glu	Arg	Lys	Lys	Lys	Glu	Glu	Lys	Val	Gly	Ser	Ala	Cys	Lys			
		1090					1095					1100							
	Asn	Asp	Tyr	Glu	Gly	Cys	Ala	Asn	Thr	Lys	Asp	Asn	Gly	Asn	Gly	Asn			
35	1105					1110					1115					1120			
	Cys	Val	Asn	Ala	Cys	Asn	Ala	Tyr	Lys	Lys	Tyr	Ile	Thr	Asp	Lys	Lys			
					1125						1130				1135				
	Glu	Gln	Tyr	Glu	Lys	Gln	Ala	Lys	Lys	Phe	Asp	Ile	Asp	Lys	Ser	Gln			
				1140					1145					1150					
40	Asn	Lys	Pro	Gly	Tyr	Glu	Asp	Tyr	Ser	Gly	Lys	Lys	Ala	Ser	Glu	Tyr			
		1155						1160					1165						
	Leu	Lys	Glu	Lys	Cys	Ile	Asn	Ser	Ser	Cys	Asp	Tyr	Met	Leu	Lys	Leu			
		1170					1175					1180							
	Lys	Asp	Asn	Ser	Asn	Tyr	Trp	Glu	Lys	Pro	His	Thr	Thr	Tyr	Asp	Asp			
45	1185					1190					1195					1200			
	Asn	Ser	Leu	Gln	Asn	Lys	Cys	Ser	Cys	Pro	Leu	Ser	Pro	Cys	Glu	Ile			
					1205					1210					1215				
	Val	Asp	Lys	Thr	Leu	Gly	Asp	Lys	Thr	Ser	Lys	Ser	Tyr	Ala	Glu	Gly			
				1220					1225					1230					
50	Cys	Lys	Trp	Lys	Tyr	Gly	Lys	Met	Pro	Leu	Gly	Leu	Gly	Trp	Leu	Cys			
			1235					1240					1245						
	Asn	Asp	Lys	Glu	Gly	Glu	Lys	Gly	Lys	Glu	Asp	Gly	Leu	Cys	Ile	Pro			
		1250					1255				1260								
	Pro	Arg	Arg	Lys	Arg	Leu	Tyr	Val	Lys	Asp	Leu	Glu	Thr	Phe	Ser	Asp			
55	1265					1270					1275					1280			
	His	Thr	Thr	Val	Gly	Leu	Arg	Glu	Ala	Phe	Ile	Lys	Cys	Ala	Ala	Val			
					1285					1290					1295				
	Glu	Thr	Phe	Phe	Ala	Trp	His	Glu	Phe	Thr	Lys	Glu	Lys	Glu	Arg	Glu			
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Tyr Lys Glu Glu Lys Gln Arg Asn Gly Glu Leu Gly Phe Ile Asp Glu
 1315 1320 1325
 Asn Asp Gln Ile Pro Lys Asp Pro Asp Asn Pro Gln Asn Lys Ile Arg
 1330 1335 1340
 5 Lys Asn Gly Glu Ile His Glu Glu Phe Lys Ser Gln Met Phe Tyr Thr
 1345 1350 1355 1360
 Leu Ala Asp Tyr Arg Asp Ile Leu Phe Gly Asn Asn Ile Gly Ile Gly
 1365 1370 1375
 Asn Asp Met Gly Lys Val Lys Ser Asn Ile Asp Lys Val Phe Ala Asn
 1380 1385 1390
 10 Ser Ser Gly Lys Thr Pro Thr Ala Lys Lys Thr Thr Pro Lys Glu Trp
 1395 1400 1405
 Trp Glu Lys Asn Ala Lys Asp Ile Trp Glu Gly Met Leu Cys Ala Leu
 1410 1415 1420
 15 Ser Tyr Asp Thr Lys Thr Lys Ile Lys Asn Glu Glu Leu Arg Lys Lys
 1425 1430 1435 1440
 Leu Ile Asp Pro Lys Asn Ser Asn Tyr Met Tyr Glu Lys Val Thr Phe
 1445 1450 1455
 Ser Ser Asp Asn Asn Thr Asn Leu Ser Lys Phe Thr Glu Arg Pro Pro
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 20 Phe Phe Arg Trp Phe Gln Glu Trp Gly Glu Glu Phe Cys Arg Lys Lys
 1475 1480 1485
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 1490 1495 1500
 25 Arg Asn His Cys Asp Gly Asp Gly Phe Asp Cys Ser Glu Ile Gly Pro
 1505 1510 1515 1520
 Asn Glu Asn Gly Ser Phe Ala Ile Phe Lys Cys Pro Ser Cys Ala Ile
 1525 1530 1535
 Ser Cys Arg Ser Tyr Lys Thr Trp Ile Asn Thr Lys Lys Asp Glu Phe
 1540 1545 1550
 30 Lys Lys Gln Glu Lys Leu Tyr Asn Lys Glu Ile Lys Asp Asn Lys Ser
 1555 1560 1565
 Asn Tyr Asp Asn Ile Tyr Asp Lys Glu Phe Val Lys Asn Leu Cys Thr
 1570 1575 1580
 35 Asp Tyr Lys Ser Val Asp Ser Phe Leu Lys Lys Leu Lys Glu Gly Pro
 1585 1590 1595 1600
 Cys Cys Asn Lys Asn Thr Lys Asp Ser Lys Ile Asp Phe Lys Asp Thr
 1605 1610 1615
 Glu Glu Thr Phe Arg Asn Ala Glu Tyr Cys Asp Pro Cys Pro Val Phe
 1620 1625 1630
 40 Gly Val Ile Cys Asn Asn Gly Asp Cys Ser Asn Ser Thr Glu Lys Lys
 1635 1640 1645
 Cys Asp Ala Gln Glu Phe Lys Val Thr Tyr Asp Val Lys Asn Lys Glu
 1650 1655 1660
 45 Asn Pro Asn Lys Glu Val Asn Met Leu Val Ser Asp Lys Thr Ala Lys
 1665 1670 1675 1680
 Lys Tyr Pro Gly Asp Leu Asn Gly Val Cys Glu Asn Ser Ser Ile Phe
 1685 1690 1695
 Glu Gly Ile Arg Glu Asp Lys Trp Ser Cys Gly Tyr Phe Cys Gly Leu
 1700 1705 1710
 50 Asp Ile Cys Thr Pro Asn Lys Thr Thr Gly Asp Ile His Asp Lys Gln
 1715 1720 1725
 Asn Ala Pro Ile Arg Val Leu Phe Lys Arg Trp Ile Glu Asn Phe Leu
 1730 1735 1740
 55 Lys Asp His Asn Lys Ile Lys Asp Lys Ile Ser Leu Cys Ile Asn Asn
 1745 1750 1755 1760
 Glu Asn Arg Asn Ile Cys Thr Asp Val Cys Arg Lys Asn Cys Glu Cys
 1765 1770 1775
 Ile Asp Lys Trp Ile Glu Met Lys Met Lys Glu Trp Lys Ile Val Arg

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				1780					1785					1790
	Asp	Arg	Tyr	Val	Lys	Gln	Tyr	Asn	Val	Ala	Asp	Ser	Val	Val
				1795				1800					1805	
5	Val	Arg	Arg	Phe	Leu	Glu	Gly	Leu	Gln	Pro	Gln	Asn	Asp	Leu
				1810				1815					1820	
	Val	Lys	Gly	Asp	Val	Asn	Asp	Leu	Arg	Asp	Leu	Glu	Glu	Leu
	1825					1830					1835			1840
	Cys	Thr	Asn	Thr	Val	Ser	Thr	Glu	Asn	Arg	Lys	Cys	Arg	Lys
				1845						1850				1855
10	Val	Val	Glu	Ser	Leu	Leu	Asn	Lys	Leu	Lys	Asn	Glu	Ile	Arg
				1860						1865				1870
	Lys	Asn	Glu	Arg	Asp	Asp	Ser	Met	Gly	Lys	Glu	Ser	Cys	Lys
				1875				1880					1885	
	Pro	Glu	Pro	Thr	Asp	Asp	Pro	Gln	Thr	Asp	Ser	Asp	Thr	His
15				1890				1895					1900	
	Pro	Asp	Ile	Pro	Pro	Gly	Asp	Val	Ala	Pro	Thr	Phe	Cys	Asn
	1905					1910					1915			1920
	Ala	Asn	Pro	Cys	Gly	Asp	Lys	Ser	Ala	Thr	Asn	Val	Val	Asn
				1925						1930				1935
20	Glu	Val	Ala	Lys	Glu	Met	His	Glu	Glu	Ala	His	Lys	Asp	Met
				1940					1945					1950
	Arg	Ser	Val	Lys	Lys	Val	Glu	Ser	Lys	Val	Lys	Asp	Ser	Thr
				1955				1960						1965
	Ser	Val	Leu	Arg	Ala	Asp	Ala	Ser	Lys	Gly	Glu	Tyr	Lys	His
25				1970				1975					1980	
	Asn	Pro	Asp	Asp	Leu	Lys	His	Asn	Met	Cys	Asn	Ile	Thr	Lys
	1985					1990					1995			2000
	Thr	Asn	Tyr	Gln	Lys	Arg	Gly	Gly	Tyr	Asn	Tyr	Arg	Gly	Pro
				2005						2010				2015
30	Gly	Lys	Gly	Asn	Gly	Lys	Asp	Thr	Arg	Phe	Val	Ile	Gly	Thr
				2020					2025					2030
	Lys	Asp	Glu	Asp	Glu	Lys	Asp	Glu	Thr	Ile	Lys	Val	Leu	Leu
				2035				2040					2045	
	Arg	Arg	Arg	His	Met	Cys	Thr	Ser	Asn	Leu	Glu	Tyr	Leu	Leu
35				2050				2055					2060	
	Asn	Lys	Gly	Pro	Leu	Leu	Lys	Val	Glu	Pro	Asp	Lys	Ile	Asn
	2065					2070					2075			2080
	Phe	Leu	Gly	Asp	Val	Leu	Leu	Ala	Ala	Lys	Tyr	Glu	Ala	Glu
				2085						2090				2095
40	Lys	Thr	Asn	Tyr	Thr	Arg	Leu	Asn	Gly	Gln	Asn	Asp	Asn	Gly
				2100					2105					2110
	Cys	Arg	Ala	Met	Lys	Tyr	Ser	Phe	Ala	Asp	Ile	Gly	Asp	Ile
				2115				2120					2125	
	Gly	Lys	Asp	Leu	Trp	Gly	Ile	Gln	Asp	Phe	Lys	Asp	Leu	Gln
45				2130				2135					2140	
	Leu	Val	Thr	Ile	Phe	Gly	Lys	Ile	Lys	Glu	Glu	Ile	Pro	Asp
	2145					2150					2155			2160
	Lys	Lys	Tyr	Ser	Ser	Glu	Asn	Pro	Pro	Tyr	Thr	Thr	Leu	Arg
				2165						2170				2175
50	Trp	Trp	Glu	Ala	Asn	Arg	Ala	Lys	Val	Trp	Glu	Ala	Met	Gln
				2180						2185				2190
	Thr	Ile	Pro	Pro	Val	Thr	Thr	Ser	Cys	Asp	Thr	Thr	Thr	Val
				2195				2200					2205	
	Leu	Val	Asp	Tyr	Ile	Pro	Gln	Arg	Leu	Arg	Trp	Met	Thr	Glu
55				2210				2215					2220	
	Glu	Trp	Phe	Cys	Lys	Met	Gln	Ser	Gln	Glu	Tyr	Glu	Val	Leu
	2225					2230					2235			2240
	Gln	Cys	Arg	Asn	Cys	Arg	Ser	Gly	Ile	Cys	Glu	Asn	Gly	Lys
				2245						2250				2255

Cys Val Lys Cys Thr Gln Ala Cys Asn Thr Tyr Lys Gln Lys Ile Lys
 2260 2265 2270
 Lys Trp Glu Asp Gln Trp Lys Glu Ile Ser Lys Lys Tyr Lys Thr Leu
 2275 2280 2285
 5 Tyr Gln Gln Ala Lys Gly Ser Val Asn Gly Ala Thr Thr Ser Ser Thr
 2290 2295 2300
 Thr Asp Glu Lys Asp Lys Asp Val Val Asp Phe Leu Lys Met Leu His
 2305 2310 2315 2320
 10 Gln Lys Asn Thr Asp Asn Thr Ile Tyr Thr Thr Ala Ala Gly Phe Ile
 2325 2330 2335
 His Gln Glu Ala His Met Thr Asp Cys Gln Lys Gln Thr Ile Phe Cys
 2340 2345 2350
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 2355 2360 2365
 15 Pro His Asp His Asp Asp Ala Cys Ala Cys Arg Pro Pro Ser Thr Pro
 2370 2375 2380
 Val Asp Val Ser Arg Lys Leu Asp Thr Gln Arg Asp Pro Lys Lys Glu
 2385 2390 2395 2400
 20 Glu Ser Glu Pro Glu Ser Glu Glu Glu Glu Asp Asp Ala Glu Glu Glu
 2405 2410 2415
 Glu Glu Pro Ala Lys Glu Thr Ala Thr Thr Glu Thr Thr Gln Pro Ala
 2420 2425 2430
 Ala Pro Ala Gly Pro Pro Val Thr Pro Val Pro Glu Leu Pro Gly Pro
 2435 2440 2445
 25 Pro Ala Pro Ala Gly Pro Ala Ala Asp Gly Pro Ile Glu Asp Asp Glu
 2450 2455 2460
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 Ser Ala Asp Glu Gly Glu Gly Glu Gly Asp Gly Gly Asp Val Gly Glu
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 40 Ile Gly Phe Ala Ala Leu Thr Tyr Phe Leu Leu Lys Lys Lys Ser Lys
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 Ser Gly His Tyr Tyr Glu Asp Thr Thr Asp Ile Thr Ser Ser Glu Ser
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 50 Glu Tyr Glu Glu Leu Asp Ile Asn Glu Ile Tyr Pro Tyr Gln Ser Pro
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 Gly Asn Thr Pro Ser Lys Gly Asp Gly Asn Thr Leu Gly Asp Asp Met
 2675 2680 2685
 55 Val Pro Thr Thr Asn Thr Phe Thr Asp Glu Glu Trp Ser Glu Leu Lys
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 2705 2710 2715 2720
 Lys Val Gly Val Ser Lys Glu Leu Pro Met Asn Ile Gly Gly Asn Val

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 2740 2745 2750
 5 Arg Asp Leu Tyr Thr Gly Glu Glu Ile Lys Tyr Asn Ile Asn Met Gly
 2755 2760 2765
 Thr Asn Ser Met Asp Asp Pro Thr Tyr Val Ser Asn Asn Val Tyr Ser
 2770 2775 2780
 Gly Ile Asp Leu Ile Asn Asp Thr Leu Ser Gly Asn Gln His Ile Asp
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 15 Arg His Arg Asp Met Cys Glu Lys Trp Asn Lys Lys Glu Glu Leu Leu
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 2930 2935 2940
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40 <212> DNA

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<400> 5

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		705				710					715				720		
	Glu	Lys	Pro	Cys	Val	Asp	Ile	Pro	Lys	Leu	Leu	Asn	Asp	Glu	Asp	Glu	
					725					730					735		
	Asp	Glu	Asp	Asp	Glu	Thr	Pro	Arg	Ala	His	Asn	Pro	Cys	Val	Asp		
				740				745					750				
25	Lys	Asn	Asp	Ser	Gln	Pro	Thr	Lys	Thr	Val	Ser	Tyr	Ile	Ala	Arg	Gln	
			755					760					765				
	Met	His	Arg	Arg	Ala	Lys	Ala	Gln	Met	Thr	Lys	Asn	Ser	Val	Val	Asp	
		770					775					780					
30	Gly	Asp	Asn	Lys	Leu	Glu	Gly	Asp	Ile	Phe	Lys	Val	Thr	Phe	Arg	Asn	
		785					790				795				800		
	Gly	Gly	Val	Gly	Lys	Asn	Leu	Asn	Gly	Asp	Ile	Cys	Lys	Ile	Asp	Lys	
					805				810						815		
	Thr	Tyr	Ser	Asn	Asp	Ser	Arg	Gly	Thr	Pro	Thr	Asp	Gly	Pro	Cys	Glu	
				820				825					830				
35	Gly	Lys	Gly	Asp	Arg	Phe	Lys	Ile	Gly	Thr	Asp	Trp	Gln	Gly	Asp	Ser	
			835					840					845				
	Phe	Val	Asn	Pro	Gln	Tyr	Arg	Gly	Ile	Tyr	Met	Pro	Pro	Arg	Arg	Gln	
		850					855					860					
40	His	Phe	Cys	Thr	Ser	Asn	Leu	Glu	Lys	Leu	Asp	Val	Ser	Arg	Val	Ile	
		865				870					875				880		
	Arg	Asn	Gly	Asn	Ala	Ser	Asn	Ser	Leu	Leu	Gly	Asp	Val	Leu	Leu	Ala	
					885				890						895		
	Ala	Lys	Tyr	Glu	Ala	Glu	Arg	Thr	Lys	Asn	His	Tyr	Val	Ser	Lys	Lys	
				900				905					910				
45	Glu	Glu	His	Ser	Glu	Ala	Cys	Arg	Ala	Val	Arg	Tyr	Ser	Phe	Ala	Asp	
			915					920					925				
	Leu	Gly	Asp	Ile	Ile	Arg	Gly	Lys	Asp	Met	Trp	Asp	Lys	Asn	His	Gly	
		930					935					940					
	Glu	Lys	Lys	Thr	Gln	Glu	Asn	Leu	Glu	Arg	Ile	Phe	Ala	Lys	Ile	Lys	
50		945				950					955				960		
	Glu	Gln	Leu	Leu	Asn	Ser	Ser	Ile	Lys	Asp	Lys	Tyr	Lys	Asp	Asp	Asp	
					965				970						975		
	Lys	Ala	Thr	Pro	Lys	Tyr	Lys	Gln	Leu	Arg	Glu	Asp	Trp	Trp	Glu	Ala	
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55	Asn	Arg	Ser	Gln	Val	Trp	Glu	Ala	Met	Gln	Cys	Pro	Pro	Lys	Asn	Gly	
			995					1000					1005				
	Thr	Phe	Pro	Cys	Lys	Ser	Asp	His	Thr	Pro	Leu	His	Asp	Tyr	Ile	Pro	
		1010					1015					1020					
	Gln	Arg	Leu	Arg	Trp	Met	Thr	Glu	Trp	Ala	Glu	Trp	Tyr	Cys	Lys	Glu	

	1025		1030		1035		1040
	Gln Ser Arg Leu Tyr Gly Glu Leu Val Glu Thr Cys Gly Lys Cys Met						
		1045		1050		1055	
5	His Lys Gly Lys Cys Lys Gln Gly Asn Gly His Cys Val Thr Cys Lys						
		1060		1065		1070	
	Pro Ala Cys Glu Lys Tyr Lys Lys Phe Ile Asn Thr Trp Gln Pro Gln						
		1075		1080		1085	
	Trp Lys Gln Met Glu Gln Lys Tyr Ser Gln Leu Tyr Glu Glu Ala Lys						
		1090		1095		1100	
10	Lys Tyr Asn Asp Ser Ser Arg Lys Asp Thr Thr Asn Lys Asp Asp Tyr						
		1105		1110		1115	1120
	Val Leu Gln Phe Leu Asn Lys Leu Leu Thr Gln Asn Lys Gly Asn Lys						
		1125		1130		1135	
	Thr Tyr Asp Thr Ala Glu Gly Tyr Val His Gln Glu Ala His Ile Ser						
15		1140		1145		1150	
	Asp Cys Gln Lys Gln Thr Gln Phe Cys Lys Lys Arg Asn Gly Glu Ile						
		1155		1160		1165	
	Pro Ser Ser Asp Thr Glu Thr Asp Asn Asn Tyr Ala Phe Arg Pro Gln						
		1170		1175		1180	
20	Pro His Asp His Asp Glu Val Cys Glu Cys Asn Thr Arg Gln Lys Thr						
		1185		1190		1195	1200
	Lys Val Arg Lys Lys Lys Lys Lys Val Asp Ala Cys Glu Met Ala Lys						
		1205		1210		1215	
	Thr Leu Leu His Asn Asn Asp Gly Thr Ile Arg Ile Gly Gln Cys Lys						
25		1220		1225		1230	
	Arg Lys Asp Glu Gly Asn Ala Glu Tyr Pro Lys Trp Asp Cys Asn Ser						
		1235		1240		1245	
	Gln Ile His Thr Thr His Asn Gly Ala Cys Met Pro Pro Arg Arg Gln						
		1250		1255		1260	
30	Lys Leu Cys Val Tyr Phe Phe Ala Asn Pro Ser Gln Ile Gly Ser Ile						
		1265		1270		1275	1280
	Asn Lys Gln Asp Asn Leu Arg Lys Ala Phe Ile Ile Ser Ala Ala Ala						
		1285		1290		1295	
	Glu Thr Phe Arg Ser Trp Gln Tyr Tyr Lys Ser Lys Asn Gly Gly Glu						
35		1300		1305		1310	
	Asn Leu Gln Thr Gln Leu Lys Asp Gly Thr Ile Pro Asp Asp Phe Lys						
		1315		1320		1325	
	Arg Gln Met Phe Tyr Thr Tyr Gly Asp Tyr Arg Asp Phe Leu Phe Gly						
		1330		1335		1340	
40	Thr Asp Ile Ser Lys Gly Leu Gly Glu Gly Thr Ala Leu Glu Lys Gln						
		1345		1350		1355	1360
	Ile Asn Ile Leu Phe Pro Asn Gly Val Arg Lys Ile Pro Asn Glu Lys						
		1365		1370		1375	
	Thr Arg Glu Lys Trp Trp Thr Asp His Gly Pro Glu Ile Trp Lys Gly						
45		1380		1385		1390	
	Met Leu Cys Ala Leu Thr Asn Gly Leu Ser Glu Ser Glu Lys Lys Thr						
		1395		1400		1405	
	Lys Ile Phe Asp Asp Tyr Ser His Asp Lys Val Asn Gln Ser Lys Asn						
		1410		1415		1420	
50	Gly Asn Pro Ser Leu Glu Asp Phe Ala Lys Lys Pro Gln Phe Phe Arg						
		1425		1430		1435	1440
	Trp Phe Ile Glu Trp Ser Asp Glu Phe Cys Arg Glu Arg Lys Lys Lys						
		1445		1450		1455	
	Glu Glu Glu Val Glu Arg Asp Cys Lys Asp Glu Tyr Glu Gly Cys Glu						
55		1460		1465		1470	
	Lys Glu Lys Asn Gly Lys Cys Val Thr Ala Cys Lys Ala Tyr Lys Glu						
		1475		1480		1485	
	Tyr Ile Thr Asn Lys Lys Glu Glu Tyr Asp Ser Gln Lys Gly Lys Phe						
		1490		1495		1500	

Asp Val Glu Lys Thr Glu Lys Lys Gln Gly Tyr Glu Asp Tyr Ser Glu
 1505 1510 1515 1520
 Lys Gln Ala Ser Glu Tyr Leu Lys Glu Lys Cys Ile Lys Ser Ser Cys
 1525 1530 1535
 5 Asn Cys Met Lys Lys Val Thr Glu Ile Ser Asn Tyr Trp Thr Asn Pro
 1540 1545 1550
 His Lys Thr Tyr Asp Thr Glu Asn Leu Gly Ile Lys Cys Glu Cys Pro
 1555 1560 1565
 10 Pro Ser Pro Cys Thr Ile Val Asp Gly Ile Leu Ser Pro Gln Asn Ser
 1570 1575 1580
 Ser Ser Tyr Ala Glu Gly Cys Lys Trp Lys Tyr Gly Lys Met Ser Gln
 1585 1590 1595 1600
 Gly Gly Thr Glu Trp Asp Cys Ser Lys Lys Ser Gly Gly Glu Gly Gly
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 15 Asn Glu Asp Gly Asp Val Val Cys Ile Pro Pro Arg Arg Arg Arg Leu
 1620 1625 1630
 Tyr Val Lys Asn Leu Gln Asp Leu Thr Gly Glu Glu Ser Leu Val Asp
 1635 1640 1645
 20 Leu Arg Lys Ala Phe Ile Lys Cys Ala Ala Ile Glu Thr Phe Phe Ala
 1650 1655 1660
 Trp His Glu Phe Lys Lys Glu Lys Glu Arg Glu Glu Lys Glu Lys Asn
 1665 1670 1675 1680
 Glu Gln Asp Val Gln Tyr Lys Ser Ser Val Leu Glu Asn Leu Gln Lys
 1685 1690 1695
 25 Gln Leu Lys Asn Gly Glu Ile Asp Asp Glu Phe Lys Arg Gln Met Phe
 1700 1705 1710
 Tyr Thr Phe Ala Asp Tyr Arg Asp Ile Cys Leu Gly Lys Asp Ile Gly
 1715 1720 1725
 30 Asn Asp Val Asp Gly Ile Asn Glu Lys Ile Asp Thr Ile Leu Gln Lys
 1730 1735 1740
 Asn Gly Lys Pro Asn Asn Ile Glu Glu Tyr Lys Lys Trp Trp Gln Lys
 1745 1750 1755 1760
 His Gly His Glu Ile Trp Glu Gly Met Leu Cys Ala Leu Ser Tyr Asn
 1765 1770 1775
 35 Thr Glu Thr Lys Glu Met Asp Lys Glu Leu Arg Asn Lys Leu Thr Glu
 1780 1785 1790
 Gln Lys Asn Gly Asn Lys Asn Thr Tyr Asp Thr Val Thr Ile Ser Gly
 1795 1800 1805
 40 Gly Pro Ile Gly Asn Thr Lys Leu Glu Lys Phe Ala Ser Arg Pro Pro
 1810 1815 1820
 Phe Phe Arg Trp Leu Glu Glu Trp Ala Asp Glu Phe Cys Arg Lys Arg
 1825 1830 1835 1840
 Thr His Lys Leu Glu Lys Ile Gln Asn Glu Cys Lys Gly Val Ser Gly
 1845 1850 1855
 45 Thr Asn Gln Cys Asp Asp Asp Gly Phe Asp Cys Asp Glu Met Cys Pro
 1860 1865 1870
 Lys Lys Asp Gly Ser Phe Glu Thr Phe Lys Cys Leu Ser Cys Ala Lys
 1875 1880 1885
 50 Ser Cys Arg Phe Tyr Lys Lys Trp Ile Ser Arg Lys Lys Glu Glu Phe
 1890 1895 1900
 Asp Lys Gln Ser Lys Lys Tyr Glu Asn Glu Ile Asp Asp Val Lys His
 1905 1910 1915 1920
 Asn Ser Asp Asn Ile Tyr Gly Lys Asp Phe Leu Glu Thr Leu Asp Gln
 1925 1930 1935
 55 Gln Tyr Lys Ser Val Glu Leu Phe Leu Glu Lys Val Lys Gly Pro Cys
 1940 1945 1950
 Ser Ile Asn Asn Asn Asn Glu Glu Cys Lys Ile Asp Phe Asn Lys Pro
 1955 1960 1965
 Lys Asp Thr Phe Gly His Ala Lys Asn Cys Gly Pro Cys Ser Glu Ile

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	1970		1975		1980														
	Arg	Phe	Lys	Cys	Ile	Glu	Asp	Asn	Ser	Asn	Trp	Val	Thr	Thr	Asn	Thr			
	1985					1990					1995								2000
5	Cys	Asn	Lys	Thr	Thr	Phe	Lys	Phe	Thr	Glu	Asp	Asn	Lys	Asp	Thr	Lys			
					2005					2010						2015			
	Glu	Asp	Ser	Glu	Gln	Leu	Gly	Met	Leu	Ile	Ser	Asp	Asn	Thr	Val	Gln			
				2020					2025						2030				
	Asn	Phe	Ala	Asp	Gly	Leu	Gln	Asn	Asp	Cys	Lys	Asp	Ala	Asp	Ile	Phe			
			2035					2040					2045						
10	Lys	Gly	Leu	Arg	Lys	Asp	Gln	Trp	Ser	Cys	Gly	Tyr	Phe	Cys	Asn	Leu			
		2050					2055						2060						
	Asp	Ile	Cys	Ser	Leu	Lys	Thr	Ser	His	Gly	Glu	Asn	Asn	Tyr	Lys	Gln			
		2065				2070					2075					2080			
	Asn	Ile	Leu	Ile	Arg	Ala	Leu	Phe	Lys	Arg	Trp	Leu	Glu	His	Phe	Leu			
15					2085					2090						2095			
	Glu	Asp	Tyr	Asn	Lys	Ile	Asn	Asp	Lys	Ile	Ser	His	Cys	Met	Lys	Asn			
				2100					2105						2110				
	Gly	Glu	Gly	Ser	Thr	Cys	Ile	Lys	Gly	Cys	Glu	Ile	Lys	Cys	Asn	Cys			
			2115					2120						2125					
20	Val	Ser	Asn	Trp	Ile	Lys	Lys	Lys	Thr	Leu	Glu	Trp	Glu	Ile	Val	Arg			
		2130					2135						2140						
	Asp	Arg	Phe	Phe	Lys	Gln	Tyr	Asn	Val	Asp	Ser	Glu	Lys	Ser	Phe	Thr			
		2145				2150					2155					2160			
	Val	Lys	Ser	Phe	Leu	Glu	Gln	Ala	Pro	Phe	Asp	Ser	Asp	Val	Gln	Lys			
25					2165					2170						2175			
	Ala	Ile	Lys	Pro	Phe	Glu	Lys	Leu	Arg	Asp	Phe	Glu	Asp	Ser	Ile	Val			
				2180					2185						2190				
	Cys	Asn	Gly	Thr	Thr	Ser	Ala	Arg	Lys	Glu	Lys	Gly	Thr	Glu	Lys	Asp			
			2195					2200						2205					
30	Val	Val	Ile	Cys	Leu	Leu	Asp	Lys	Leu	Gln	Lys	Gln	Ile	Glu	Thr	Cys			
		2210					2215							2220					
	Gln	Thr	Lys	His	Lys	Glu	Thr	Ser	Gly	Asn	Thr	Cys	Ser	Pro	Pro	Pro			
		2225				2230					2235					2240			
	Asn	Pro	Asp	Thr	Gln	Thr	Asp	Thr	Pro	Leu	Pro	Leu	Glu	Ser	Phe	Pro			
35					2245					2250						2255			
	Pro	Pro	Phe	Cys	Asn	Val	Pro	Pro	Asn	Pro	Cys	Gly	Asp	Lys	Asp	Ala			
				2260					2265						2270				
	Thr	Asn	Val	Val	Gly	Val	Glu	Val	Leu	Ala	Lys	Glu	Met	Gln	Glu	Ala			
			2275					2280						2285					
40	Ala	His	Lys	Ser	Met	Leu	Ser	Arg	Ser	Ala	Val	Asp	Ser	Gly	Lys	Gly			
		2290					2295					2300							
	Asp	Lys	Gly	Glu	Ser	Ser	Ser	Gly	Lys	Ser	Ser	Leu	Glu	Gly	Asp	Ile			
		2305				2310					2315					2320			
	Ser	Leu	Ala	Glu	Phe	Lys	Asn	Gly	Phe	Asn	Pro	Ser	Gly	Leu	Lys	Asn			
45					2325					2330						2335			
	Val	Cys	Gln	Ile	Thr	Glu	Lys	His	Ser	Tyr	Ala	Asn	Gly	Ala	Ser	Lys			
				2340					2345						2350				
	Asp	Pro	Cys	Asn	Gly	Lys	Gly	Asn	Gly	Lys	Asp	Gln	Arg	Phe	Lys	Ile			
			2355					2360						2365					
50	Glu	Thr	Gln	Trp	Lys	Asp	Thr	Gly	Lys	Ser	Gly	Lys	His	Val	Asp	Val			
		2370					2375						2380						
	Tyr	Leu	Pro	Pro	Arg	Arg	Glu	His	Ile	Cys	Thr	Ser	Asn	Leu	Glu	Tyr			
		2385				2390					2395					2400			
	Leu	Leu	Lys	Gly	Asn	Ser	Asp	Gln	Ile	Met	Lys	Val	Gly	Asn	Asn	Lys			
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	Ile	Asn	His	Ser	Phe	Leu	Gly	Glu	Val	Leu	Leu	Ala	Ala	Lys	Tyr	Glu			
				2420					2425					2430					
	Ala	Glu	Phe	Ile	Lys	Thr	Asn	Tyr	Thr	Arg	Leu	Asn	Gly	Gln	Asn	Asp			
			2435					2440						2445					

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 Asp Ile Val Arg Gly Arg Asp Leu Trp Glu His Asn Asp Phe Lys Lys
 2465 2470 2475 2480
 5 Leu Glu Arg Asp Leu Val Lys Ile Phe Gly Lys Ile Lys Glu Gly Ile
 2485 2490 2495
 Thr Asp Glu Thr Thr Lys Lys Gln Tyr Glu Lys Asp Asp Thr Asp Asn
 2500 2505 2510
 Lys Gln Leu Arg Cys Asp Trp Trp Glu Ala Asn Arg Asp Gln Val Trp
 2515 2520 2525
 10 Glu Ala Met Gln Cys Lys Thr Thr Ile Pro Pro Val Thr Thr Ser Cys
 2530 2535 2540
 Asp Thr Thr Thr Val Thr Pro Leu Val Asp Tyr Ile Pro Gln Arg Leu
 2545 2550 2555 2560
 15 Arg Trp Met Met Glu Trp Ala Glu Trp Tyr Cys Lys Tyr Gln Ser Lys
 2565 2570 2575
 Ala Tyr Ser Glu Leu Arg Lys Gly Cys Glu Asp Cys Arg Ser Trp Lys
 2580 2585 2590
 Cys Met Lys Gly Asp Ser Lys Cys Glu Asn Cys Thr Lys Ala Cys Lys
 2595 2600 2605
 20 Asp Tyr Asn Ser Lys Ile Glu Pro Trp Lys Gln Gln Trp Thr Lys Ile
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 2625 2630 2635 2640
 25 Ser Asn Ser Gly Thr Thr Tyr Pro Lys Asp Glu Lys Asp Val Val Ser
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 Phe Leu Ser Lys Leu His Glu Lys Asn Lys Asp Asn Lys Ile Tyr Tyr
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 2675 2680 2685
 30 Gln Gln Thr His Phe Cys Asp Lys Lys Asn Gly Glu Thr Leu Pro Ser
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 2725 2730 2735
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 2820 2825 2830
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 2835 2840 2845
 50 Leu Gly Pro Thr Pro Arg Ser Glu Val Glu Pro Glu Glu Ser Glu Asn
 2850 2855 2860
 Glu Asp Val Glu Asp Glu Asp Asp Glu Glu Glu Glu Glu Asp Pro Asp
 2865 2870 2875 2880
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 Gln Glu Ala Glu Ala Val Pro Pro Gln Pro Gln Ala Pro Ala Pro Leu
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 Pro Pro Pro Pro Pro Pro Leu Pro Pro Leu Lys Thr Ala Leu Met Ser

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 5 2945 2950 2955 2960
 Ile Asp Ile His Lys Gly Asp Tyr Gly Ile Pro Thr Leu Glu Ser Lys
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 Asn Arg Tyr Ile Pro Tyr Val Ser Asp Thr Tyr Lys Gly Lys Thr Tyr
 2980 2985 2990
 10 Ile Tyr Met Glu Gly Asp Thr Ser Gly Asp Glu Lys Tyr Gly Phe Met
 2995 3000 3005
 Ser Asp Thr Thr Asp Ile Thr Ser Ser Glu Ser Glu Tyr Glu Glu Leu
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 Asp Ile Asn Asp Ile Tyr Val Pro Gly Ser Pro Lys Tyr Lys Thr Leu
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 3090 3095 3100
 Gly Asn Val Leu Asp Asp Gly Ile Asn Glu Lys Pro Phe Ile Thr Ser
 25 3105 3110 3115 3120
 Ile His Asp Arg Asp Leu Asn Ser Gly Glu Glu Ile Ser Tyr Asn Ile
 3125 3130 3135
 Asn Met Ser Thr Asn Ser Met Asp Asp Pro Lys Tyr Val Ser Asn Asn
 3140 3145 3150
 30 Val Tyr Ser Gly Ile Asp Leu Ile Asn Asp Ser Leu Ser Gly Gly Lys
 3155 3160 3165
 Pro Ile Asp Ile Tyr Asp Glu Val Leu Lys Arg Lys Glu Asn Glu Leu
 3170 3175 3180
 Phe Gly Thr Asn Tyr Lys Lys Asn Thr Ser Asn Asn Asn Val Ala Lys
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 Leu Thr Asn Ser Asp Pro Ile Met Asn Gln Leu Asp Leu Leu His Lys
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 Trp Leu Asp Arg His Arg Asp Met Cys Glu Met Trp Asn Asn Lys Glu
 3220 3225 3230
 40 Glu Val Leu Asp Lys Leu Lys Glu Gln Trp Asn Lys Asp Asn Asp Gly
 3235 3240 3245
 Gly Asp Ile Ser Ser Asp Ser Asn Lys Arg Leu Asn Thr Asp Val Ser
 3250 3255 3260
 Ile Glu Ile Asp Met Asp Asp Pro Lys Gly Lys Lys Glu Phe Ser Asn
 45 3265 3270 3275 3280
 Met Asp Thr Ile Leu Asp Asn Ile Glu Asp Asp Ile Tyr Tyr Asp Val
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 3300 3305 3310
 50 Val Asp Val Pro Lys Lys Val His Val Glu Met Lys Ile Leu Asn Asn
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<212> DNA

<213> Plasmodium falciparum

<220>

5 <221> gene

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<223> var gene PFD1235w codon optimised

<400> 7

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   aaggagcagg cctccaagga cgccaagatc cacggacacc acctgaaggg cgacctggcc 180
   aaggccgtgt tcaggcacc cttctccgcc tacaggccca actacggcaa cccctgcgag 240
   ctggactacc gcttccacac caacgtgtgg cacaggaacg ccgaggacag gaacccctgc 300
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   aagaccatca ggaacaagga catcctgtcc gacaacccca agtgcaccgg atgctccgtg 1140
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   gagcgcaaca tcgacttcac catgaccgga gacaaggacg ccttctaccg ctccgactac 1440
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   gagtggaaag aagtcaagac catctacaag aacgagaacg gaaacaccaa caactactac 1980
   aagaagctga acaaccactt ccagggtacg ttcttccacg tgatgaagga gctgaacaag 2040
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	Ile	Thr	Asp	Pro	Asn	Asp	Gln	Ala	Thr	Val	Cys	Arg	Ala	Ile	Arg	Tyr

		915			920			925											
	Ser	Phe	Ala	Asp	Leu	Gly	Asp	Ile	Ile	Arg	Gly	Lys	Asp	Met	Trp	Asn			
		930					935					940							
	Ile	Asn	Ser	Asp	Ala	Lys	Asp	Leu	Gln	Asp	Arg	Leu	Glu	Lys	Ile	Phe			
5	945					950					955					960			
	Lys	Thr	Ile	Asn	Glu	Lys	Leu	Pro	Asn	Glu	Ile	Gln	Lys	Arg	Tyr	Thr			
				965						970					975				
	Asn	Arg	Glu	Asn	Lys	His	Leu	Asp	Leu	Arg	Ser	Asp	Trp	Trp	Glu	Ala			
				980					985					990					
10	Asn	Arg	His	Gln	Val	Trp	Arg	Ala	Met	Lys	Cys	Ala	Thr	Lys	Gly	Ile			
		995						1000					1005						
	Ser	Asn	Asn	Asn	Cys	Asn	Gly	Ile	Pro	Ile	Glu	Asp	Tyr	Ile	Pro	Gln			
		1010					1015					1020							
	Arg	Leu	Arg	Trp	Met	Thr	Glu	Trp	Ala	Glu	Trp	Tyr	Cys	Lys	Lys	Gln			
15	1025					1030					1035					1040			
	Ser	Gln	Glu	Tyr	Glu	Lys	Leu	Glu	Glu	Lys	Cys	Gly	Met	Cys	Thr	Gly			
				1045						1050					1055				
	Lys	Gly	Gln	Gly	Asp	Gly	Lys	Asp	Cys	Thr	Gln	Lys	Asp	Lys	Glu	Cys			
				1060					1065					1070					
20	Ser	Pro	Cys	Lys	Lys	Ala	Cys	Asp	Ala	Tyr	Lys	Lys	Glu	Ile	Glu	Lys			
		1075						1080					1085						
	Trp	Glu	Lys	Gln	Trp	Lys	Thr	Val	Ser	Ala	Ile	Tyr	Gln	Ile	Leu	Tyr			
		1090					1095					1100							
	Ala	Lys	Ala	Arg	Ile	Val	Ala	Ser	Asn	Gly	Gly	Pro	Gly	Tyr	Tyr	Asn			
25	1105					1110					1115					1120			
	Thr	Glu	Val	Gln	Lys	Lys	Asp	Arg	Ser	Val	Tyr	Asp	Phe	Leu	Tyr	Glu			
				1125						1130					1135				
	Leu	His	Leu	Gln	Asn	Gly	Gly	Lys	Lys	Gly	Pro	Pro	Pro	Ala	Thr	His			
				1140					1145					1150					
30	Pro	Tyr	Lys	Ser	Val	Asn	Thr	Arg	Asp	Lys	Arg	Asp	Ala	Thr	Asp	Asp			
		1155						1160					1165						
	Thr	Thr	Pro	Thr	Val	Tyr	Ser	Thr	Ala	Ala	Gly	Tyr	Val	His	Gln	Glu			
		1170					1175					1180							
	Ala	His	Ile	Gly	Asp	Cys	Lys	Glu	Gln	His	Val	Phe	Cys	Asp	Asn	Asn			
35	1185					1190					1195					1200			
	Gly	Asn	Lys	Glu	Lys	Tyr	Ala	Phe	Lys	Asn	Pro	Pro	Asn	Val	Tyr	Val			
				1205						1210					1215				
	Glu	Ala	Cys	Lys	Cys	Met	Thr	Arg	Glu	Ala	Pro	Pro	Pro	Pro	Thr	Thr			
				1220					1225					1230					
40	Pro	Ser	Thr	Pro	Asn	Pro	Cys	Ala	Glu	Thr	Gly	Gly	Val	His	Thr	Ile			
		1235						1240					1245						
	Lys	Thr	Val	Thr	Asp	Val	Ala	Lys	Ile	Leu	Gln	Gly	Glu	Ala	Asn	Glu			
		1250					1255					1260							
	Thr	Met	Leu	Lys	Asn	Ser	Ser	Asn	Gly	Asn	Asp	Lys	Asp	Glu	Ser	Lys			
45	1265					1270					1275					1280			
	Leu	Lys	Gly	Lys	Ala	Glu	Glu	Gly	Asp	Tyr	Ser	Arg	Gly	Gly	Thr	Pro			
				1285						1290					1295				
	Ser	Asp	Phe	Asn	Asn	Leu	Cys	Gly	Ile	Thr	Gln	Lys	His	Ser	Asn				
				1300					1305				1310						
50	Ala	His	Asn	Asp	Ser	Gln	Gln	Pro	Cys	Tyr	Gly	Lys	Asp	Gln	Lys	Arg			
		1315						1320					1325						
	Phe	Asn	Val	Gly	Thr	Glu	Trp	Ser	Phe	Lys	Asp	Asn	His	Arg	Lys	Arg			
		1330					1335					1340							
	Thr	His	Pro	Glu	Ala	Tyr	Met	Pro	Pro	Arg	Arg	Glu	His	Ile	Cys	Thr			
55	1345					1350					1355					1360			
	Ser	Asn	Leu	Glu	Tyr	Leu	Ile	His	Lys	Arg	Lys	Lys	Pro	Ile	Ile	Glu			
				1365						1370					1375				
	Gly	Asp	Pro	Asn	Lys	Ile	Ile	His	Ser	Leu	Leu	Gly	Asp	Val	Leu	Leu			
				1380					1385					1390					

Ala Ala Lys Tyr Glu Ala Glu Asn Ile Lys Lys Leu Tyr Glu Glu Asn
 1395 1400 1405
 Asn Asn Arg Lys Asp Gln Glu Gly Ile Cys Arg Ala Met Lys Tyr Ser
 1410 1415 1420
 5 Phe Ala Asp Ile Gly Asp Ile Ile Arg Gly Lys Asp Met Trp Ile Glu
 1425 1430 1435 1440
 Asn Asn Asp Ala Lys Arg Leu Gln Thr Asn Leu Lys Glu Ile Phe Thr
 1445 1450 1455
 Lys Ile Lys Glu Lys Thr Gly Gly Thr Thr Tyr Asn Glu Asp Asn Asp
 1460 1465 1470
 10 Pro Tyr Leu Lys Leu Arg Ala Asp Trp Trp Glu Ala Asn Arg Ala Lys
 1475 1480 1485
 Val Trp Lys Ala Met Lys Cys Lys Thr Asn Gly Val Asp Ile Thr Cys
 1490 1495 1500
 15 Asp Ser Asp His Thr Pro Leu Asp Asp Tyr Ile Pro Gln Arg Leu Arg
 1505 1510 1515 1520
 Trp Met Thr Glu Trp Ala Glu Trp Tyr Cys Lys Ala Gln Ser Gln Glu
 1525 1530 1535
 Tyr Lys Lys Leu Glu Glu Lys Cys Ser Gln Cys Lys Ser Lys Gly Lys
 1540 1545 1550
 20 Gly Gly Asn Glu Cys Tyr Arg Glu Thr Lys Glu Cys Asn Asp Cys Lys
 1555 1560 1565
 Gln Ala Cys Glu Glu Tyr Lys Arg Lys Ile Lys Thr Trp Ala Asp Gln
 1570 1575 1580
 25 Trp Lys Val Ile Ser Asn Lys Tyr Glu Asp Leu Tyr Lys Lys Ala Gln
 1585 1590 1595 1600
 Asn Pro Thr Asn Ala Val Leu Lys Asp Asn Lys Asp Glu Lys Asp Lys
 1605 1610 1615
 Asn Val Ile Asp Phe Leu Thr Gln Leu Gln Lys Ala Asn Asn Gly Glu
 1620 1625 1630
 30 Lys Thr Gly Val His Thr Val Tyr Ser Thr Ala Ala Gly Tyr Ile His
 1635 1640 1645
 Gln Glu Ala Arg Thr Arg Glu Cys Gln Glu Gln Arg Glu Phe Cys Asp
 1650 1655 1660
 35 Lys Lys Asn Gly Ile Asp Asn Thr Ser Tyr Ala Phe Lys Asp Pro Pro
 1665 1670 1675 1680
 His Gly Tyr Ala Thr Ala Cys Asp Cys Ile Asn Arg Ser Gln Thr Glu
 1685 1690 1695
 Glu Pro Lys Lys Lys Glu Glu Asn Val Glu Ser Ala Cys Lys Ile Val
 1700 1705 1710
 40 Glu Glu Val Leu Ser Lys Pro Arg Asp Lys Thr Thr Gly Gly Ile Asp
 1715 1720 1725
 His Cys Asn Pro Lys Tyr Tyr Pro Arg Lys Glu Asn Tyr Pro Gly Trp
 1730 1735 1740
 45 Asn Cys Thr Pro Gly Gln Phe Lys Ser Gly His Ala Gly Ala Cys Met
 1745 1750 1755 1760
 Pro Pro Arg Arg Ile Lys Leu Cys Val Ile Asn Leu Gln Tyr Leu Asn
 1765 1770 1775
 Glu Lys Lys Ser Pro Glu Glu Leu Arg Lys Ala Phe Ile Gln Cys Ala
 1780 1785 1790
 50 Ala Ile Glu Thr Tyr Trp Leu Trp Gln Lys Tyr Lys Lys Asp Lys Asn
 1795 1800 1805
 Gly Gly Val Ala Gln Ala Lys Leu Asn Ser Gly Thr Ile Pro Asp Asp
 1810 1815 1820
 55 Phe Lys Arg Gln Met Phe Tyr Thr Phe Gly Asp Tyr Arg Asp Leu Cys
 1825 1830 1835 1840
 Leu Asp Thr Asp Ile Ser Ser Lys Ala Asp Thr Ser Thr Gly Val Gly
 1845 1850 1855
 Lys Val Lys Ile Asn Ile Asp Ser Val Phe Gln Lys Ile Asp Ile Thr

				1860						1865						1870					
	Asn	Val	Glu	Gln	Arg	Lys	Pro	Trp	Trp	Gly	Lys	Asn	Ala	Glu	Ala	Ile					
	1875							1880							1885						
5	Trp	Asp	Gly	Met	Leu	Cys	Ala	Leu	Ser	Tyr	Asn	Thr	Thr	Asn	Lys	Asn					
	1890							1895							1900						
	Met	Asp	Tyr	Asn	Ala	His	Thr	Lys	Leu	Asn	Pro	Thr	Tyr	Gly	Tyr	Asn					
	1905							1910							1915						
	Ala	Ile	Lys	Ser	Glu	Leu	Glu	Asp	Phe	Val	Asn	Arg	Pro	Gln	Phe	Leu					
								1925							1930						
10	Arg	Trp	Phe	Thr	Glu	Trp	Ser	Asp	Glu	Phe	Cys	Thr	Glu	Arg	Ser	Ile					
								1940							1945						
	Lys	Ile	Lys	Glu	Leu	Glu	Thr	Lys	Cys	Asn	Asp	Cys	Thr	Val	Ser	Glu					
								1955							1960						
	Ser	Gly	Thr	Ser	Asp	Ala	Thr	Gly	Asn	Lys	Thr	Cys	Asp	Asp	Lys	Asp					
15								1970							1975						
	Lys	Cys	Asp	Glu	Cys	Lys	Arg	Ala	Cys	Thr	Thr	Tyr	Lys	Thr	Trp	Leu					
	1985							1990							1995						
	Lys	Asn	Trp	Lys	Thr	Gln	Tyr	Lys	Thr	Gln	Ser	Lys	Lys	Tyr	Phe	Asp					
								2005							2010						
20	Asp	Lys	Arg	Lys	Glu	Leu	Tyr	Lys	Ser	Ile	Asp	Asp	Val	Ala	Ser	Ser					
								2020							2025						
	Thr	Gln	Ala	Tyr	Gln	Tyr	Leu	His	Ala	Gln	Leu	Lys	Lys	Leu	Cys	Gly					
								2035							2040						
25	Asn	Ala	Asp	Cys	Lys	Cys	Met	Asp	Gly	Glu	Ser	Lys	Glu	Thr	Thr	Gly					
	2050							2055							2060						
	Gln	Pro	Asp	Asn	Ser	His	Asp	Ser	His	Met	Pro	Ala	Ser	Leu	Asp	Asp					
	2065							2070							2075						
	Glu	Pro	Glu	Glu	Val	Asn	Gly	Lys	Cys	Asn	Cys	Lys	Val	Lys	His	Arg					
								2085							2090						
30	Pro	Gln	Pro	Pro	Leu	Ala	Leu	Pro	Pro	Pro	Ala	Pro	Ser	Gly	Pro	Pro					
								2100							2105						
	Ala	Glu	Asp	Gln	Ile	Glu	His	Asp	Asn	Arg	Gly	Arg	Ser	Glu	Arg	Gly					
								2115							2120						
35	Asp	Gln	Gly	Pro	Leu	Pro	Ala	Arg	Pro	Pro	Pro	Pro	Pro	Gln	Ala	Ala					
	2130							2135							2140						
	Gln	Pro	Pro	Gln	Pro	Lys	Pro	Lys	Arg	Thr	Gly	Glu	Gly	Leu	Gly	Arg					
	2145							2150							2155						
	Asn	Leu	Pro	Pro	Ala	Asp	Arg	Asn	Thr	Asn	Leu	Ser	Asp	Ser	Glu	Glu					
								2165							2170						
40	Glu	Asp	Asp	Glu	Asp	Asp	Asp	Glu	Val	Gln	Glu	Glu	Glu	Glu	Thr	Pro					
	2180							2185							2190						
	Pro	Ser	Glu	Ala	Glu	Glu	Gly	Glu	Gly	His	Val	Glu	Thr	Glu	Glu	Glu					
								2195							2200						
45	Thr	Lys	Pro	Val	Lys	Glu	Lys	Thr	Glu	Gly	Ala	Gly	Ala	Thr	Glu	Val					
								2210							2215						
	Thr	Lys	Gln	Gly	Ser	Ala	Pro	Thr	Ala	Thr	Thr	Pro	Thr	Val	Glu	Asp					
	2225							2230							2235						
	Ile	Cys	Ala	Thr	Val	Ala	Lys	Ala	Leu	Lys	Gly	Asp	Lys	Ser	Leu	Asn					
								2245							2250						
50	Ala	Ala	Cys	Ala	Leu	Lys	Tyr	Gly	Lys	Asn	Asn	Ser	Arg	Leu	Gly	Trp					
	2260							2265							2270						
	Lys	Cys	Ile	Pro	Thr	Ser	Gly	Asp	Lys	Thr	Asp	Thr	Ser	Glu	Asn	Gly					
								2275							2280						
55	Ala	Pro	Arg	Arg	Ala	Arg	Ser	Ala	His	Gly	Gly	Lys	Ser	Asp	Ser	Glu					

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Asn Gly Asp Gly Asn Gly Ser Gln Glu Val Val Ser Val Asn Gly Ala
 2340 2345 2350
 Ser Glu Ser Gly Gly Ser Gly Ser Gly Thr Glu Ser Gln Ala Ser Asp
 2355 2360 2365
 5 Val Ser Gln Gly Asn Gly Ala Ser Thr Ser Pro Gln Val Ala Leu Leu
 2370 2375 2380
 His Ala Phe Val Lys Ser Ala Ala Ile Glu Thr Phe Phe Ala Trp His
 2385 2390 2395 2400
 Lys Tyr Lys Val Asp Lys Glu Ile Glu Glu Lys Glu Lys Gln Ala Ala
 2405 2410 2415
 10 Gln Asn His Leu Val Gln Arg Lys Thr Ser Glu Asn Pro Gln Lys Lys
 2420 2425 2430
 Leu Glu Gly Gly Glu Ile Pro Glu Asp Phe Lys Arg Gln Met Phe Tyr
 2435 2440 2445
 15 Thr Leu Gly Asp Tyr Arg Asp Ile Leu Val Gly Asp Lys Thr Met Ile
 2450 2455 2460
 Glu Ala Leu Glu Lys Ser Gly Asp Thr Lys Ile Glu Asp Ile Ser Glu
 2465 2470 2475 2480
 Lys Ile Pro Lys Ile Leu Asp Gly Glu Asn Asn Lys Ala Ala Gly Gly
 2485 2490 2495
 20 Gly Pro Lys Gln Pro Asn Ser Gly Lys Thr Pro Gln Glu Trp Trp Lys
 2500 2505 2510
 Glu Asn Ala Lys His Ile Trp His Gly Met Ile Cys Ala Leu Thr Tyr
 2515 2520 2525
 25 Asn Thr Asp Ser Asn Gly Lys Asp Lys Lys Ile Gln Gln Val Lys Ala
 2530 2535 2540
 Thr Asp Asn Thr Asp Leu Phe Gln Lys Leu Lys Lys Asp Asn Asp Tyr
 2545 2550 2555 2560
 Glu Thr Val Ser Phe Gly Ala Ser Gly Thr Gly Ala Lys Ser Asn Asp
 2565 2570 2575
 30 Asp Thr Lys Leu Lys Asn Phe Val Val Arg Pro Thr Tyr Phe Arg Trp
 2580 2585 2590
 Leu Glu Glu Trp Gly Glu Glu Phe Cys Arg Lys Gln Lys His Lys Leu
 2595 2600 2605
 35 Tyr Ile Ile Lys Lys Asp Cys Arg Asp Asn Lys Phe Cys Ser Gly Asp
 2610 2615 2620
 Gly Leu Arg Cys Asp Glu Lys Val Pro Asp Lys Lys Asp Ile Phe Lys
 2625 2630 2635 2640
 His Phe Asp Cys Pro Ser Cys Ala Arg His Cys Arg Ser Tyr Arg Lys
 2645 2650 2655
 40 Trp Ile Glu Arg Lys Lys Thr Glu Tyr Glu Lys Gln Glu Ser Ala Tyr
 2660 2665 2670
 Ser Lys Gln Lys Ser Asn Tyr Val Asn Gly Ser Asn Gly Asp Gly Gly
 2675 2680 2685
 45 Asn Asn Asn Asp Lys Glu Phe Tyr Thr Lys Leu Glu Thr Cys Thr Lys
 2690 2695 2700
 Ala Thr Asn Phe Leu Glu Ser Leu Lys Gly Gln Cys Ile Gly Asn Asn
 2705 2710 2715 2720
 Asn Gly Gly Thr Asp Ile Lys Phe Ser Asn Thr Asn Ile Thr Phe Gly
 2725 2730 2735
 50 Ser Ala Glu Asp Cys Lys Pro Cys Ser Glu Phe Lys Val Asn Cys Glu
 2740 2745 2750
 Asn Gly Ser Cys Gly Ser Ala Lys Gln Lys Asp Cys Pro Asn Asn Thr
 2755 2760 2765
 55 Ile Thr Ser Gln Asn Ile Lys Gly Leu Thr Asp Gln Val Asp Met Arg
 2770 2775 2780
 Val Ser Asp Asn Thr Glu Ser Gly Phe Glu Gly Asp Leu Gly Ile Cys
 2785 2790 2795 2800
 Gln Gly Ala Gly Ile Phe Lys Gly Ile Arg Lys Asp Glu Trp Lys Cys

				2805				2810				2815				
	Gly	Asp	Phe	Cys	Gly	Ile	Asp	Ile	Cys	Thr	Leu	Glu	Lys	Thr	Asn	Asn
				2820					2825					2830		
5	Gly	Lys	Glu	Ser	Asp	Lys	Lys	Tyr	Ile	Ile	Met	Lys	Glu	Phe	Val	Lys
			2835					2840				2845				
	Arg	Trp	Leu	Glu	Tyr	Phe	Phe	Glu	Asp	Tyr	Asn	Arg	Ile	Gln	Lys	Lys
			2850				2855					2860				
	Leu	Lys	Thr	Cys	Lys	Glu	Asn	Gly	Lys	Gly	Ser	Thr	Cys	Ile	Arg	Ser
	2865					2870				2875					2880	
10	Cys	Val	Asp	Glu	Trp	Ile	Lys	Leu	Lys	Lys	Asp	Glu	Trp	Gln	Lys	Ile
					2885					2890					2895	
	Asn	Ser	Asn	Tyr	Leu	Asp	Gln	Asn	Thr	Lys	Glu	Asn	Pro	Glu	Gly	Asn
				2900					2905					2910		
	Asn	Leu	Ser	Ser	Phe	Leu	Glu	Asp	Gly	Pro	Phe	Lys	Asn	Glu	Val	Asp
15			2915					2920				2925				
	Lys	Ala	Ile	Lys	Pro	Cys	Gly	Asn	Leu	Thr	Asp	Phe	Lys	Lys	Ser	Lys
		2930					2935				2940					
	Lys	Cys	Asn	Gly	Thr	Ser	Arg	Ser	Gly	Asn	Ser	Glu	Glu	Ser	Thr	Lys
	2945					2950				2955					2960	
20	Tyr	Asp	Gly	Val	Ile	Cys	Leu	Leu	Asp	Asn	Leu	Lys	Asn	Ile	Ile	Lys
					2965					2970					2975	
	Thr	Cys	Gln	Asn	Val	Pro	Ser	Gly	Lys	Pro	Asp	Thr	Pro	Cys	Gln	Lys
			2980						2985					2990		
	Ser	Pro	Ala	Pro	Val	Gly	Asp	Asp	Asp	Pro	Leu	Glu	Glu	Glu	Glu	Asn
25			2995					3000				3005				
	Pro	Val	Thr	Gln	Pro	Asn	Ile	Cys	Pro	Gln	Thr	Ser	Val	Glu	Glu	Lys
		3010					3015				3020					
	Lys	Lys	Glu	Glu	Glu	Glu	Lys	Cys	Asp	Glu	Lys	Glu	Glu	Glu	Glu	Glu
	3025					3030				3035					3040	
30	Lys	Glu	Glu	Glu	Lys	Asp	Lys	Gly	Asp	Glu	Glu	Val	Lys	Glu	Glu	Glu
					3045					3050					3055	
	Lys	Asp	Lys	Gly	Asp	Glu	Glu	Glu	Glu	Ala	Glu	Glu	Glu	Glu	Glu	Glu
			3060					3065						3070		
	Glu	Glu	Glu	Thr	Asp	Ser	His	Ile	Tyr	Glu	Asp	Tyr	Ser	Asp	Ser	Asp
35			3075					3080				3085				
	Ala	Glu	Glu	Asp	Asp	Glu	Asp	Glu	Ala	Val	Thr	Glu	Ser	Leu	Ser	Pro
		3090					3095				3100					
	Ser	Glu	Ser	Gln	Pro	Lys	Arg	Leu	Leu	Arg	Glu	Phe	Pro	Ser	Pro	Glu
	3105				3110					3115					3120	
40	Leu	Lys	Asn	Ala	Met	Leu	Phe	Ser	Thr	Ile	Leu	Trp	Met	Val	Gly	Ile
				3125						3130					3135	
	Gly	Phe	Ala	Ala	Phe	Thr	Tyr	Phe	Phe	Leu	Lys					
				3140					3145							